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§ 72. **Ferns on the Cumberland.**—In the BULLETIN for June I reported the finding of *Adiantum Capillus-Veneris*, L., in Kentucky. I promised your readers then that I would probably visit the locality and give full particulars regarding the fern flora of this unexplored region.

The Cumberland River is a beautiful stream of clear water flowing through a very wild country and having high sandstone cliffs on each side. The mountains are well wooded. Hemlocks, oaks, chestnuts, birches, two magnolias and the tulip tree predominating; vacciniums, laurels and rhododendrons forming the undergrowth. The river opposite our tent was about 200 rods wide, but very shallow; it narrows somewhat, nearer the falls. Here the river is precipitated over the conglomerate table-rock with a vertical fall of sixty-three feet. The scenery below the falls is very grand. Sailing down in a boat one sometimes gets under some great overhanging ledge whose brow is richly clothed with *Polypodium vulgare*.

My first ramble was over the hills below the falls. I had not proceeded far when I found a few plants of *Lygodium palmatum*, an old favorite that I first met with a few years ago in Rockcastle Co., Ky. Tramping carelessly along, the climbing beauty seemed to haunt me; if I looked up, there it was hanging in heavy tresses from the cliffs above, away out of reach; if I looked under my feet, there it was ready to entangle me in its mazy web; move in any direction, it would stare me in the face, seeming to say—"You need not pass laws for my protection, you will never uproot me from my mountain retreat." I wondered sometimes whether the Virginia creeper or this beautiful fern would have the mastery. One bench of rock projecting out from two perpendicular cliffs, was just one mass of *Lygodium*; it was impossible to separate the plants, they were so twined and twisted and matted together.

I journeyed on, looking out for other rarities. *Asplenium pinatifidum*, *A. Trichomanes*, *A. ebeneum* and *A. montanum* were found quite plentiful. Here, towards the top of the range, there are a great many precipitous rocks, which are tunneled out at the base, forming dark and damp recesses. In some of these places I expected to find *Trichomanes radicans*. I had not searched very far when my toil was rewarded. There it was, growing in the greatest profusion, seeming to fancy the corner darkest and furthest from the light. With difficulty I removed the roots from the rock. There was little or no soil, but the roots seemed to have become part of the rock itself. This translucent beauty has evidently no desire to be removed from its secret hiding place. I also found the more common forms of ferns quite plentiful. My further walks added very little of interest. I delighted to observe the *Lygodium* growing in such profusion, and found a few plants of *Pellaea atropurpurea* growing on a sandstone cliff. This to me was of some interest, as heretofore I have always found this plant associated with limestone.

About fifty feet from this rock, I was fortunate in finding three or four plants of the *Adiantum Capillus-Veneris*, but they were very sickly-looking, and not over four inches in length. This, however, satisfied me that the fern was in the neighborhood and made me resume my search. The locality already reported for this fern was

forty miles away; but, from seeing these few plants, I made sure I should succeed in finding it here in greater profusion. I was disappointed. I searched everywhere, into every crevice and every likely place. Occasionally I would come across an overhanging ledge, and find my old friend, the *Trichomanes*, but no Venus-hair. After a week's diligent search, I abandoned the field and repaired to Point Burnside.

Point Burnside is a station on the Cincinnati Southern R. R., at the head of the navigable waters of the Cumberland River. The south fork of the Cumberland joins the main river at this point. The river is not so wide as at Cumberland Falls, but much deeper. I found I had got into a very different geological region from that at the Falls. The bed of the river and the range of cliffs on each side were limestone, but the high ranges were all capped with sandstone. On the lower cliffs I found in great abundance, beautiful specimens of *Pellaea atropurpurea*, and, to my surprise and delight, *Asplenium parvulum*; but I was anxious to visit the cascade, the reputed home of the maidenhair.

Getting into a canoe or dug-out, and with the assistance of a guide, I paddled down stream, about half a mile. I got out and walked towards the water-fall, and in a moment was perfectly entranced. I wondered if it was a dream or a reality. Could it be possible that this lovely fern should be growing in such great profusion. Yes, there it was, having probably been growing for thousands of years, unheard of and unsung. Imagine a hill side torn asunder by some unknown force, forming precipitous crags and deep cave-like recesses, with huge masses of rocks lying at the base, and numerous streams of the clearest cold water, rushing in every direction, and all overgrown with mosses, liverworts, maidenhair and the bulbous bladder-fern. Every rock, every crevice, was just one great mass of *Adiantum*. In the dark hollows, where the sun seldom penetrated, the fronds were thin and delicate, with leaflets broad and fringed like those of *A. Farleyense* of the greenhouses. The main cascade is about eighty feet high, and over it was pouring quite a stream of water. The rim or border of this cliff was a mass of fern fronds, some about 30 inches in length from the rootstock, hanging down away out of reach of the destroyer, if he should ever find this place. With some difficulty I ascended the top of the hill, as I wanted to see where all the water was coming from. The highest point is about three hundred feet above the river bed. A little from the top my guide showed me a cave out of which the water was flowing. The mouth of this cave measured about twelve feet in width, forming an arch of about six feet at the highest point. At the present time the water was making a pretty swift stream. The ground is somewhat flattish a little above the cascade, causing the water to distribute itself in different directions before falling, thus making the beautiful series of falls, as one looks up from below. The *Adiantum* is growing in great profusion from the cave mouth down to the base of the cliff, and immense bunches of it are found on the flattish plateau immediately above the fall. In fact, it is growing in every spot where this cave water reaches it. The whole rock is encrusted with a thick coat of carbonate of lime, and

the cave is a beautiful illustration of cave formation. When a freshet or rain storm is in progress in the far-off mountains this stream is sure to be affected. Residents say that the water comes out with such force sometimes that one can hear it for miles. This then to me is the secret of the whole thing. The mountain has been burst asunder by the continued force of water. The *Adiantum Capillus-Veneris* has certainly an affinity for this geological formation. The carbonate of lime and the water is its very life. There it grows, in its own selected home, as it never grew before; and it is to be hoped no hand of vandalism will ever destroy it. This scene is now a perfect gem of Nature's handiwork, in every sense.

I impressed Major Wallace, a gentleman who has some influence in this quarter, with the importance of having this spot protected. Next year there will be a great rush of visitors to this place, and, without some restriction, they will soon uproot every frond. The fern is found plentiful about two miles further up the river; and those desiring specimens can get them there. I may state I found this fern only in places surrounded by such conditions as have already been mentioned.

Louisville, Ky., Aug. 18.

JOHN WILLIAMSON.

§ 73. **Asplenium ebenoides**, R. R. Scott, in **New York State**.—I send, herewith, a frond of *Asplenium ebenoides*, R. R. Scott, which I found yesterday (Aug. 6th), on limestone rocks about four miles S. E. of Poughkeepsie. There were but three plants, and I secured but three fronds. I will give the locality a more thorough looking over, later on, and hope to find some more. *Asplenium ebeneum*, Ait., and *Camptosorus* were, as usually the case, growing with it—all three within a space of about a foot square. In these plants the veins anastomose quite frequently—about 24 times in the frond that I have. Prof. Eaton describes the venation in his specimens as everywhere free. I have never seen this fern mentioned as having been found in New York before; but, whether it has, or has not been, it certainly is very scarce, and worthy of being recorded in the BULLETIN.

Poughkeepsie, N. Y.

CLARENCE LOWN.

§ 74. **Fendler's Trinidad Ferns**.—The sets of the second, or supplementary distribution, of this fine collection are now at Prof. Eaton's Herbarium. Several sets (including the first distribution) are still unsold.

§ 75. **Dr. Garber's Porto Rico Plants** are also for sale by Prof. Eaton. The sets run from 96 to 17 species, and are mostly interesting plants. That most delicate of all ferns, *Trichomanes trichodeum*, is in all the sets.

§ 76. **Notes from Syracuse**.—*Plantago media*, L., has been found in the streets. It resembles *P. major*, but has soft downy leaves, and shorter petioles which are not grooved; the spikes of flowers are shorter, but the stamens are longer and brilliantly colored. Muhlenberg found it in Pennsylvania (Cat. 1813), but Dr. Gray says it is